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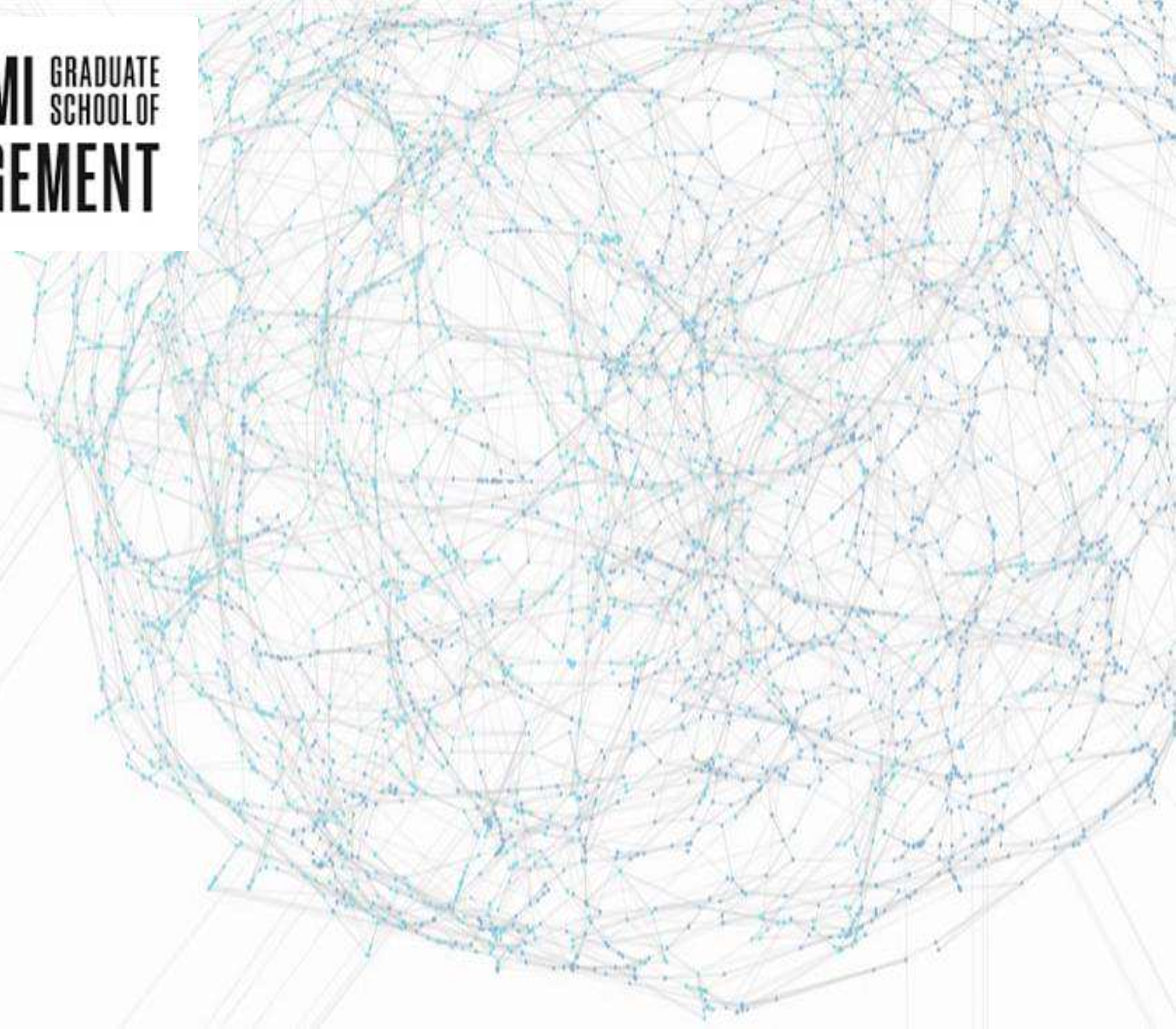
POLIMI GRADUATE SCHOOL OF MANAGEMENT



Open Innovation and AI

November 7th 2023

Introduction to Lorenzo Tencati

Lorenzo Tencati

Lorenzo is a serial **entrepreneur, investor** and strategy **advisor** with a **tech** bias (focusing on AI)

Lorenzo started his career at **Bain & Company** in Europe and obtained his MBA from **London Business School**

Lorenzo is a **YPO member** since 2014 and has been working across **Europe** and **Africa** over the last decade. He is a **Lecturer at MIP Politecnico di Milano**

Singular

Tech-focused global strategy and investment consulting firm

- Offices in Johannesburg, Zug, Munich, Milan

LTH GROUP

Impact investing, with a **Tech bias** (www.seon.group, www.Intellico.ai, …)

- Offices in Italy and Switzerland

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Revolutionizing human decision making with Explainable AI

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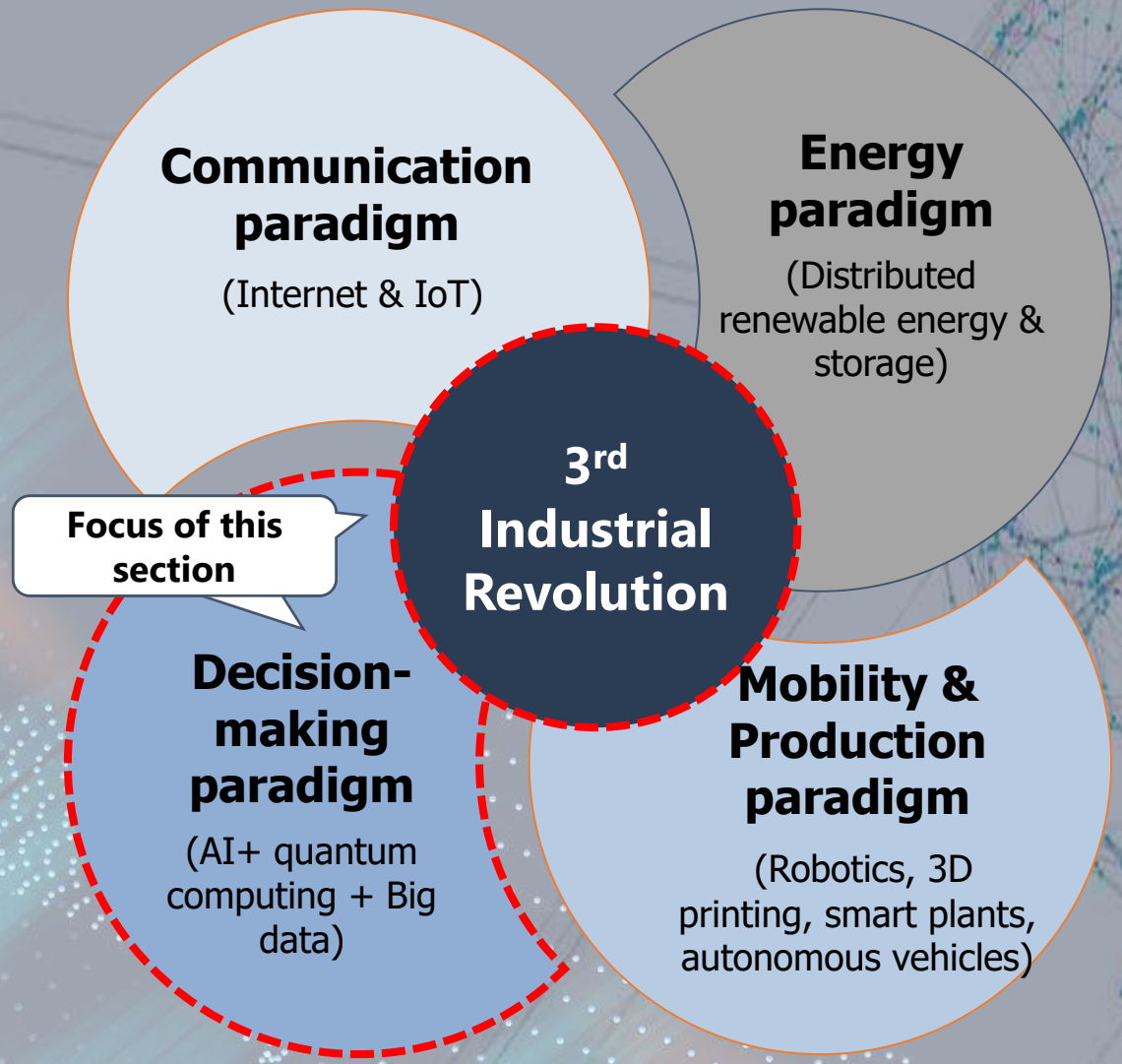

1st Industrial Revolution: *1760s, born in the UK*

- Communication: **Telegraph**
- Energy: **Coal**
- Mobility & Production: **Locomotive & steam engine**
- Decision making: **Human**

2nd Industrial Revolution: *1860s, born in the US*

- Communication: **Telephone, radio**
- Energy: **Oil**
- Mobility & Production: **Cars, trucks & planes**
- Decision making: **Human**

3rd Industrial Revolution: *2010s, born in the US*

- Communication: **Internet/ IoT**
- Energy: **Distributed renewables**
- Mobility & Production: **Autonomous vehicles & plants**
- Decision making: **AI + Human**

Sources: The Third Industrial Revolution, Jeremy Rifkin (2011 & 2017), Singular research

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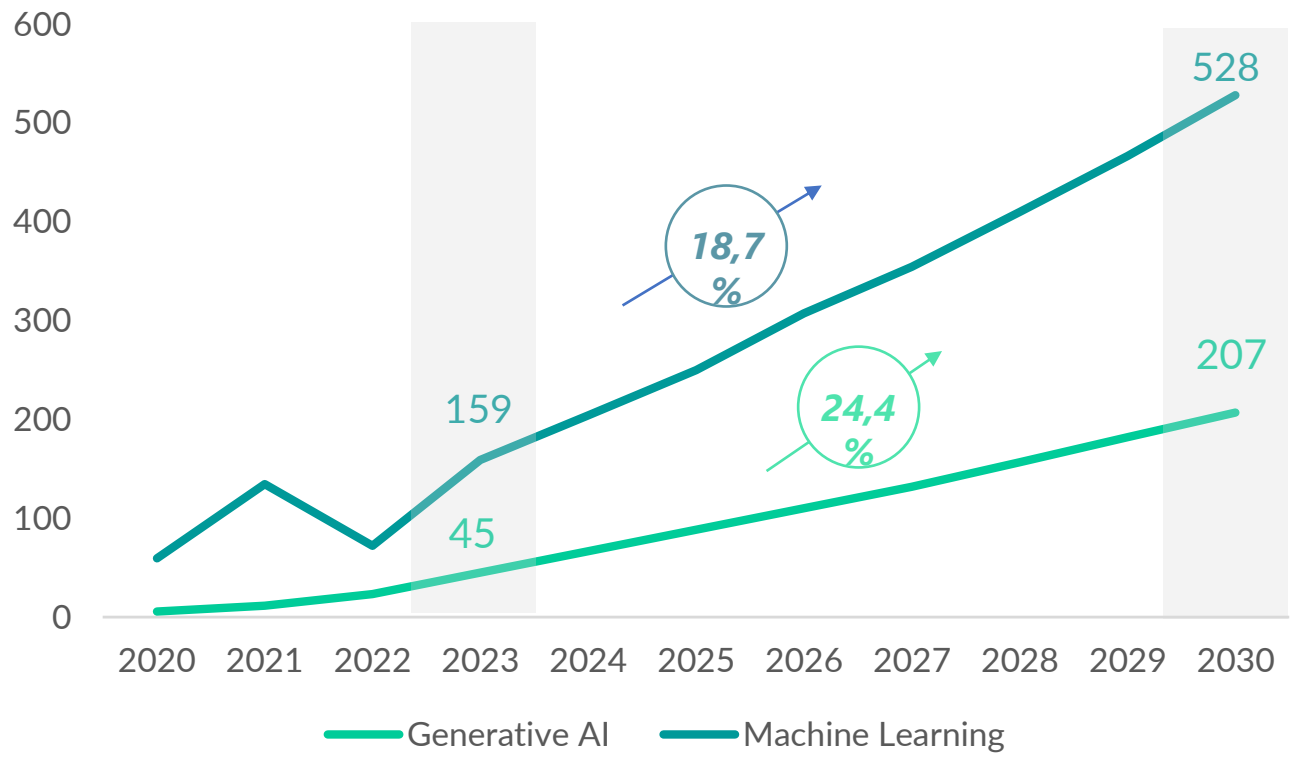
THE MARKET OPPORTUNITY

Artificial Intelligence Market size (USD Billion)
Generative AI vs Machine Learning



Source: Statista.com

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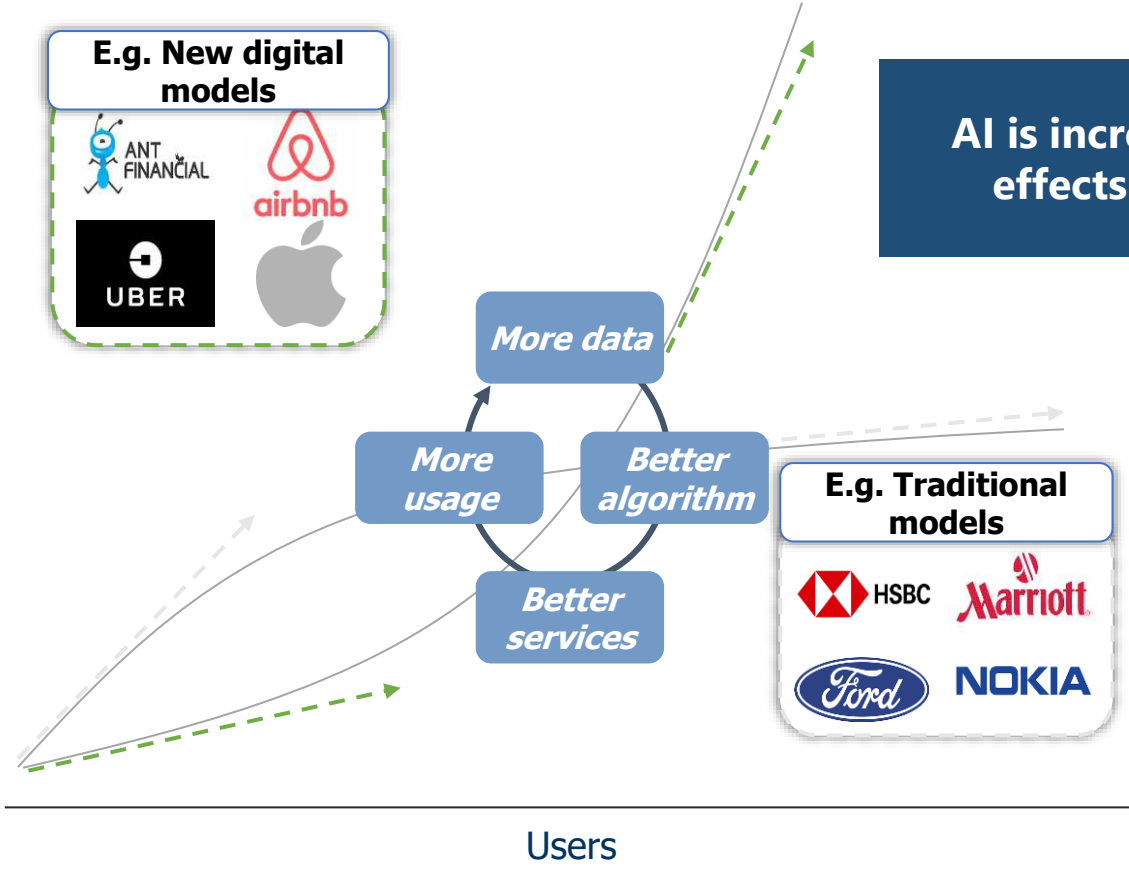
The Winners at the "Innovation Game" are winning FAST and BIG

Digital models have "data network effects" on their side

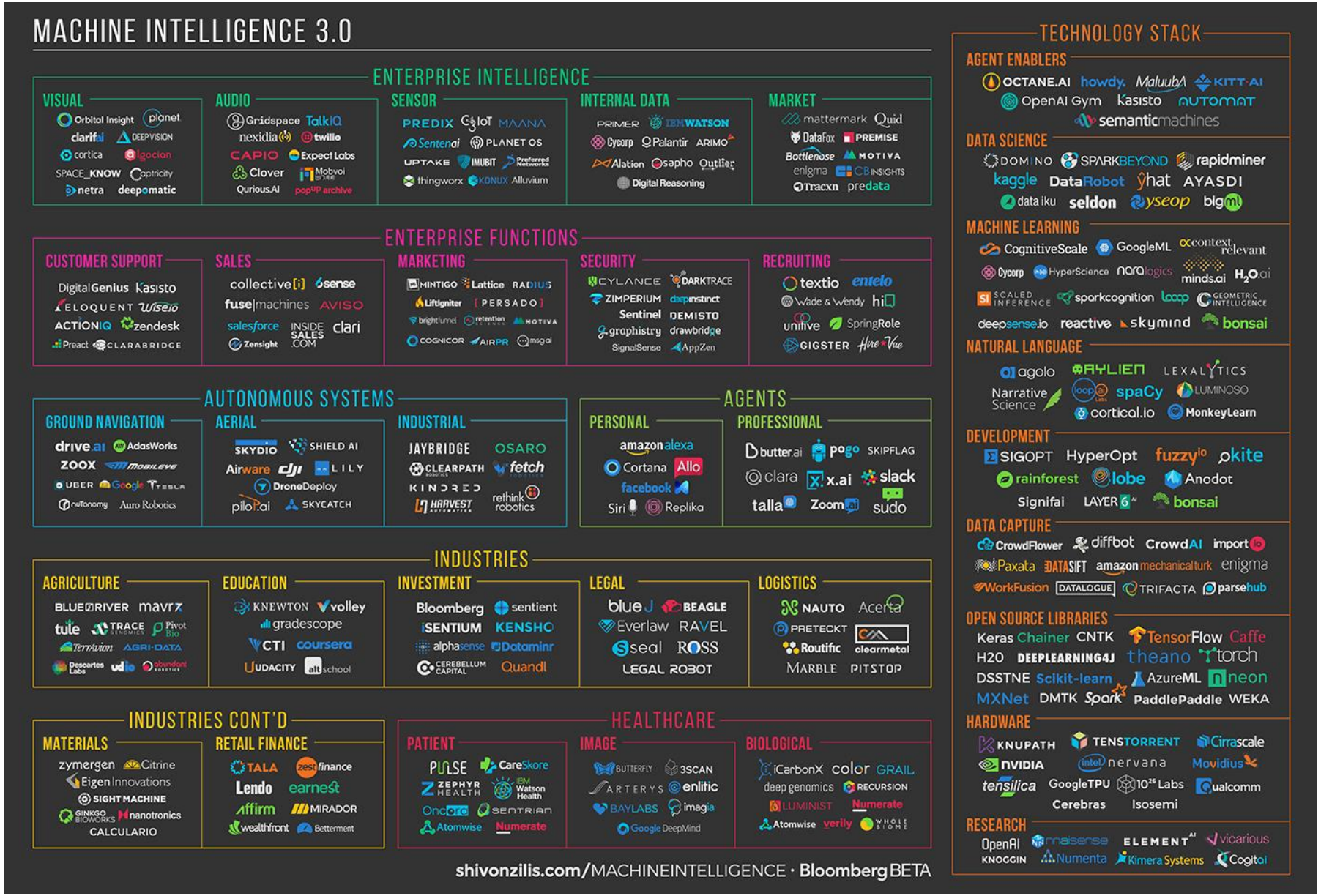
Value and number of users of digital vs tradition business models



AI is increasing these effects massively

1 Market cap as of October 2021
Source: CompaniesMarketCap, BundL

THE NEW TECH STACK: MAKE, BUY OR PARTNER?



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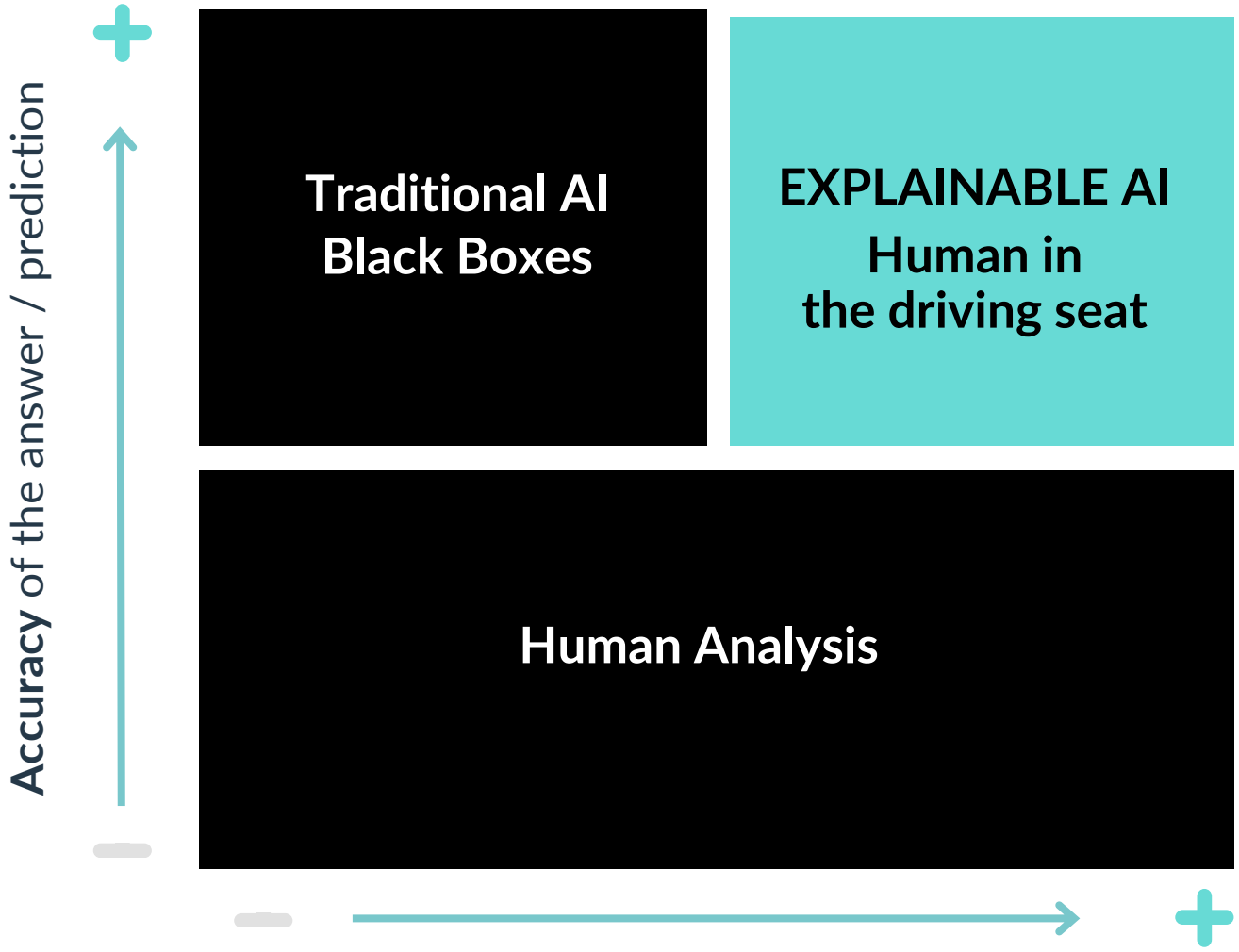
THE IMPERATIVE: KEEP HUMANS IN THE DRIVING SEAT



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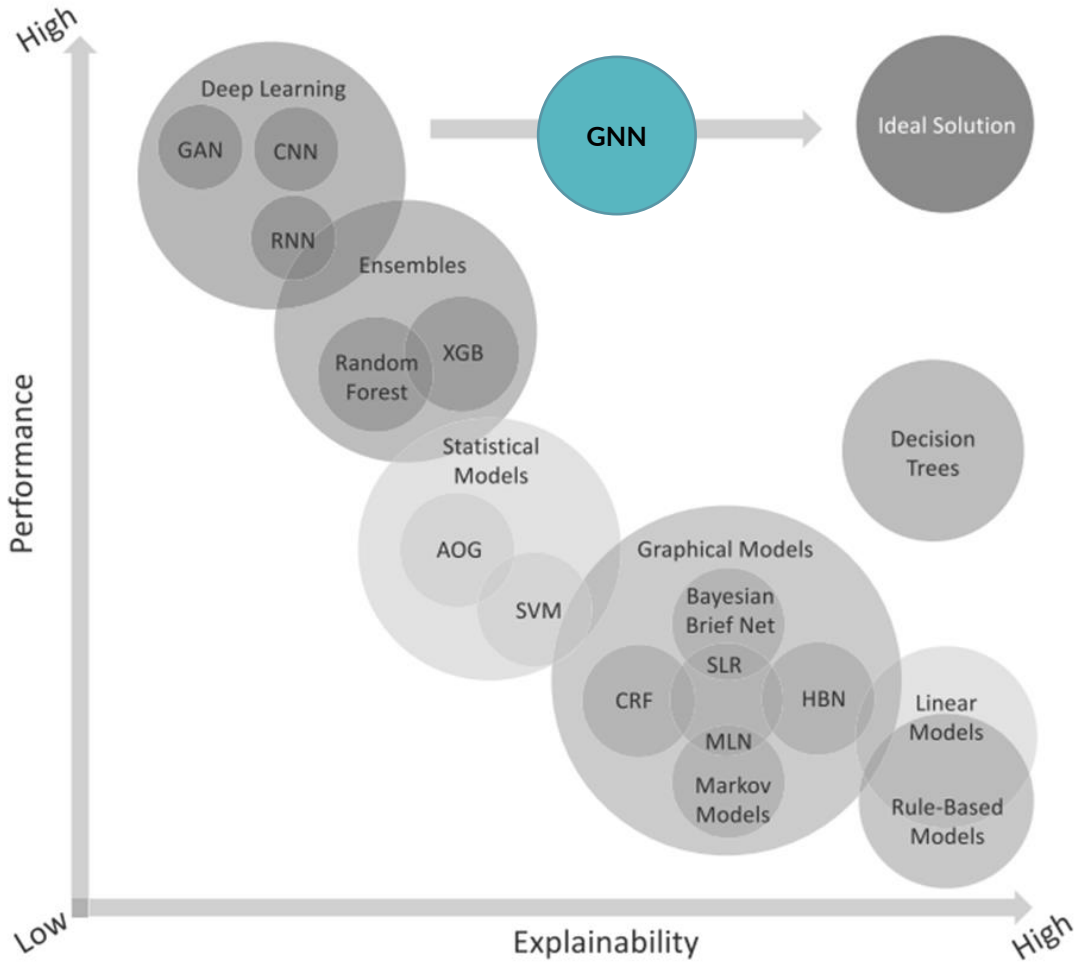
HOW TO KEEP HUMANS IN THE DRIVING SEAT?



Our research is yielding great results with:

- **Knowledge graphs**
- **Physics-informed AI**
- **Graph Neural Networks**
- **Vertical LLMs**

...

Souce: Unbox the black-box for the medical explainable AI via multi-modal and multi-centre data fusion, 2021;

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HAVE YOU EVER EXPERIENCED ...

REVENUES PRESSURE

Match your clients' taste and reduce the risk of losing revenues

REGULATORY PRESSURE

Be more sustainable and beware of blacklist components

SUPPLY CHAIN PRESSURE

Reduce production costs

FORMULATION TRIALS

From which recipe do we start with trial & error?

The guy who made it left last month. Shall we start all over again?!

How can our competitor obtain that taste with a lactose-free candy?

LABS TESTS

I can't possibly test all recipes combinations at the lab

The external lab says it cannot process it in 10 days

We changed the mix by 0,5% but the output properties changed dramatically

USER TEST

10 months to get here and sommeliers do not like it. What are the options now?

The users prefer a slightly different taste. And now?

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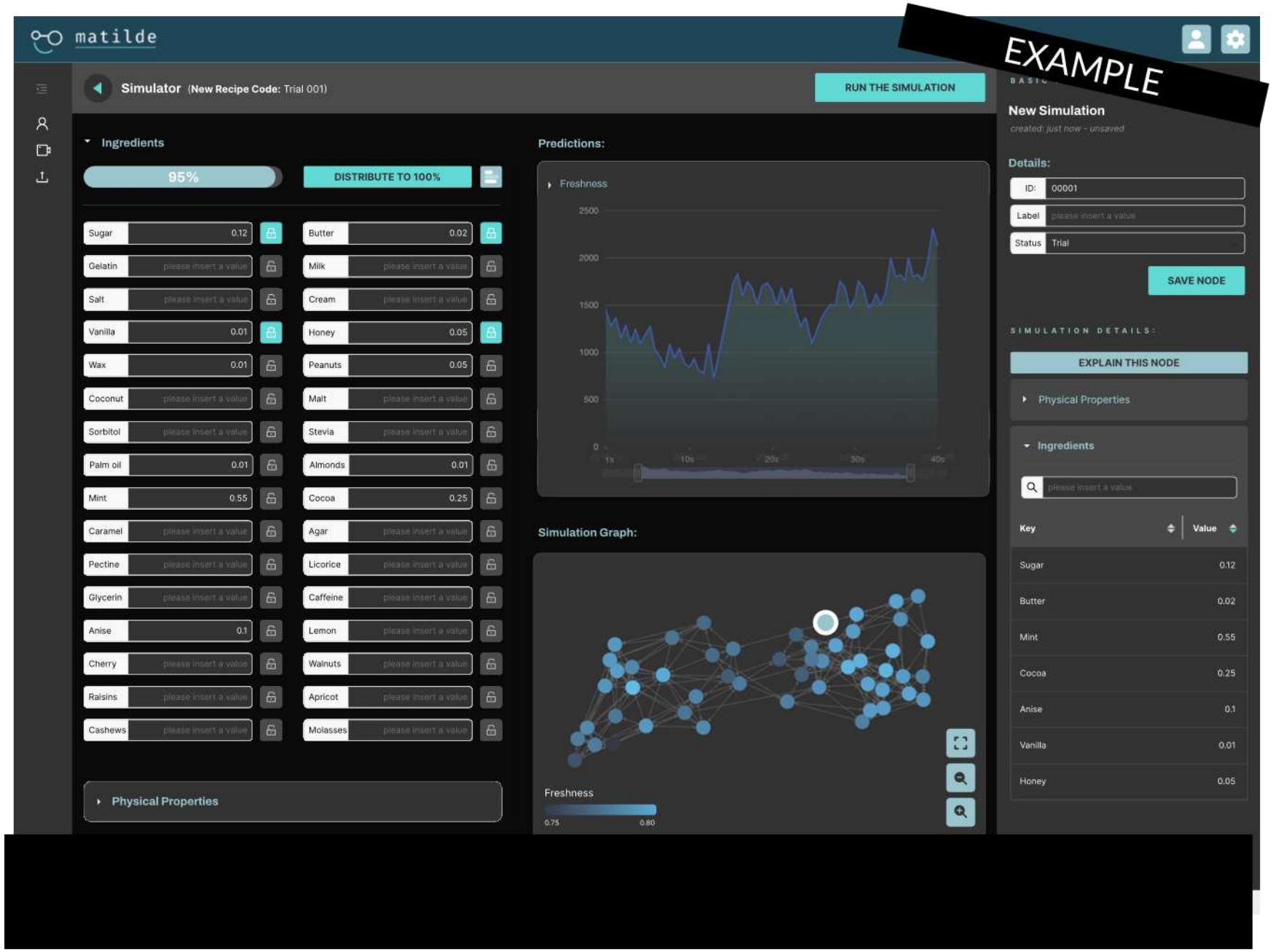
OUR CASE STUDY IN FOOD



INPUT: Existing formulation ingredients mix to be adjusted (e.g., replacing costly ingredients)

OUTPUT: Predicted variable value (e.g., Freshness over time) based on the ingredient mix

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matilde

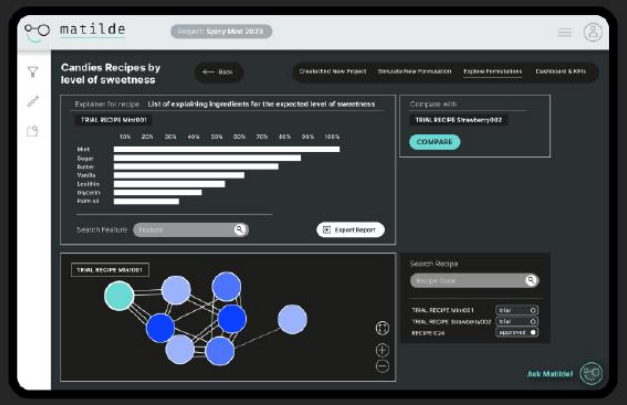
BETTER PRODUCTS, FASTER

Watch the demo

OPTIMIZER

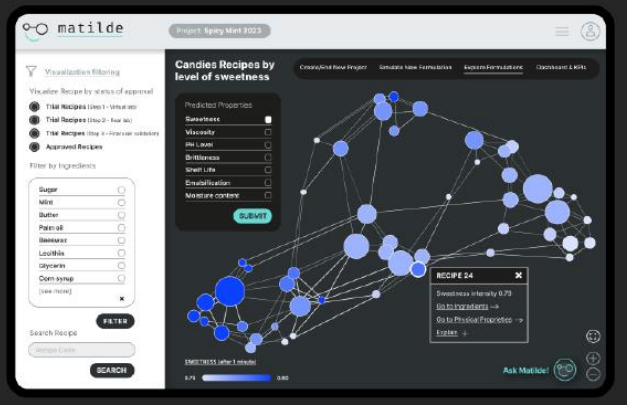
Simulate and optimize trials virtually before of getting in real Lab

EXPLAINER



Understand the root causes behind your results

EXPLORER



Explore all the possibilities and turn your past experiences into knowledge

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MARKET REQUEST

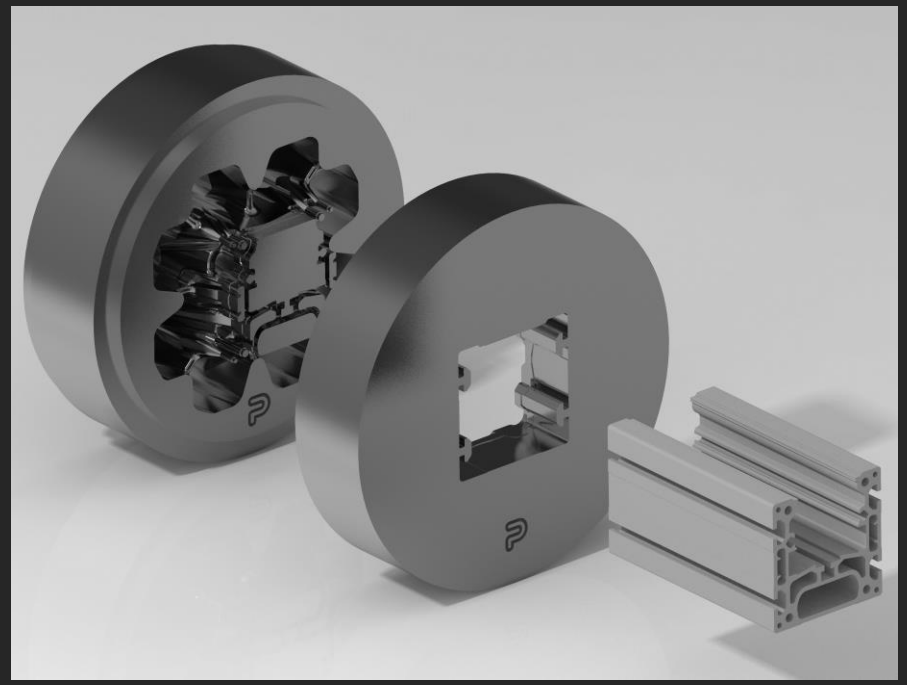
Improve «precision» of dies with high-level design without impacting on delivering time

INVOLVED RESOURCES

200+ CAD designers (~40 in Verdello)

CHALLENGES

- Barriers to exploit projects archive: computational impossibility to query the archive of 200k+ past projects
- Impossibility to provide a complete description of all the details that are encompass in an image



→ Low historical re-use of past projects (<20%)

HOW TO EFFECTLY IDENTIFY SIMILAR IMAGES/PROJECTS THAT CAN BE REUSE?

(1) Based on interviews carried in July 2022

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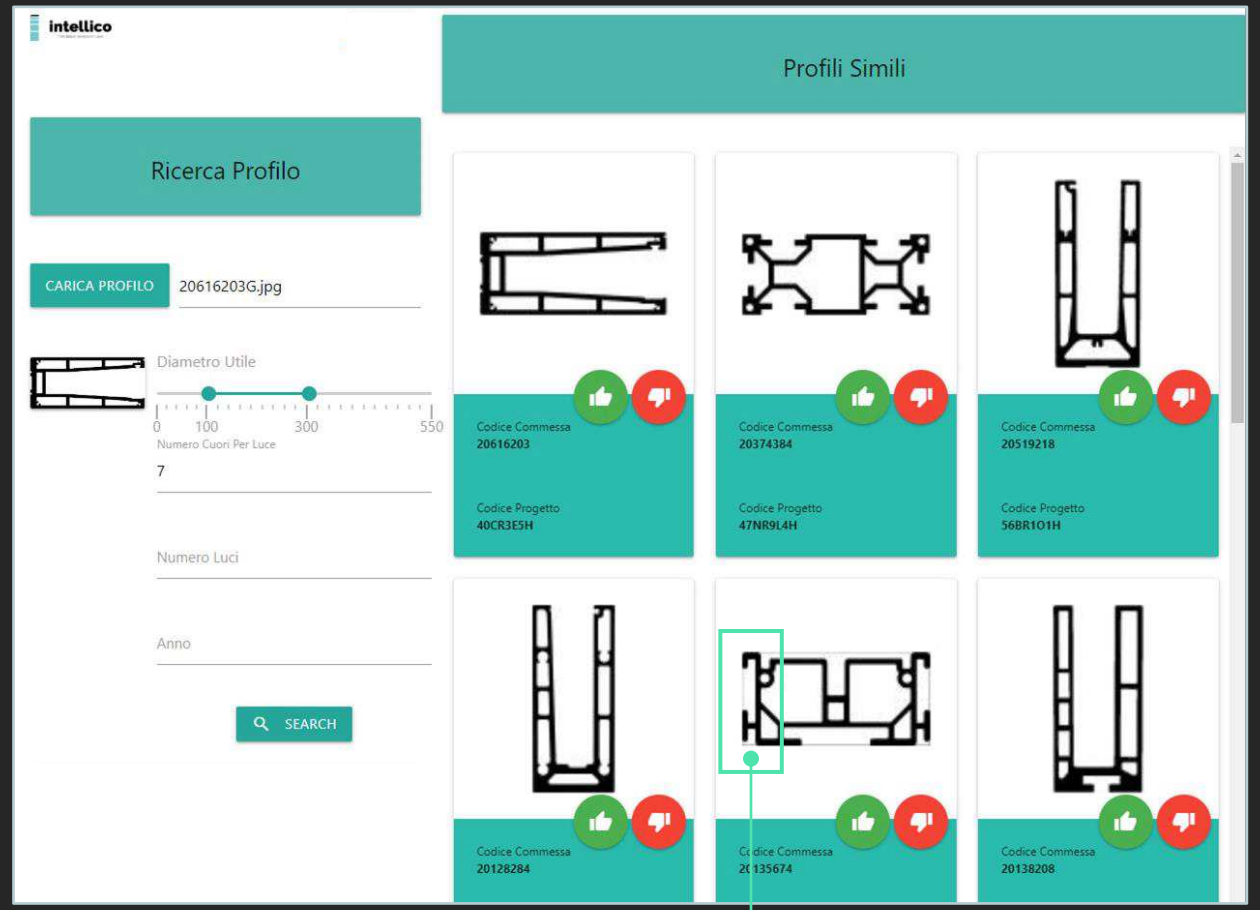
LET'S SEE THE IMAGE SIMILARITY IN ACTION



A

Input customer requirements (images, CAD design, size, material, and other technical characteristics).

B

Return the list of the 20/30 most similar projects

C

Possibility to access to profiles with similar details

Feedback collection for improvements

D

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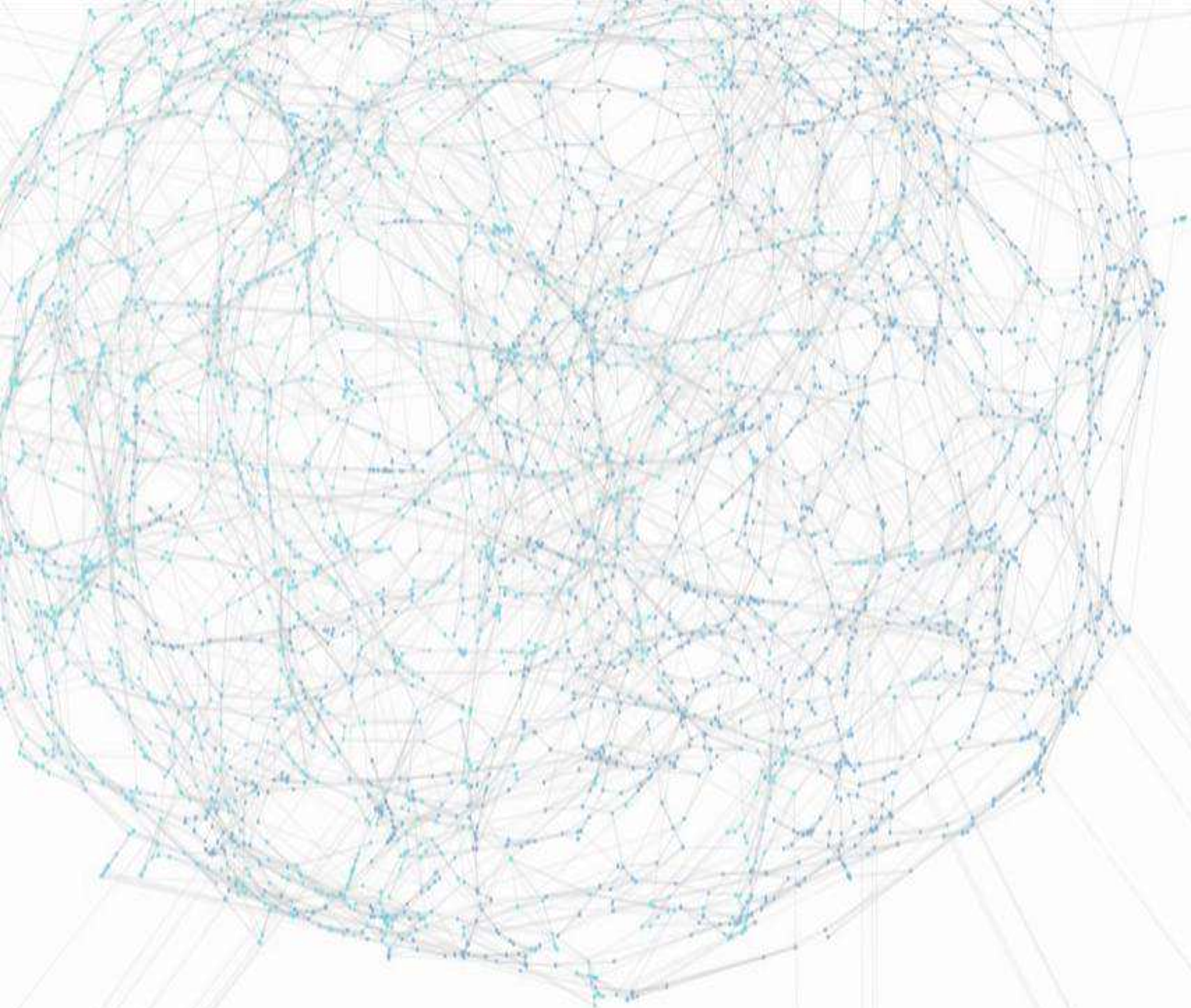

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